

REMARKS

The Office Action dated February 10, 2004, has been carefully considered. In the Office Action, the Patent Examiner asserted numerous § 112 rejections against claims 1-10 and also rejected claims 1-10 as either anticipated or obvious over Tarr et al., U.S. Patent No. 6,045,120. By way of this amendment, Applicant has amended claims 1, 2, 3 and 10. Additionally, claims 11-20 have been added to provide additional and more comprehensive patent coverage. Applicant respectfully requests reexamination and reconsideration of the rejections in view of the foregoing amendments and the following remarks.

First, turning to the § 112 rejections, Applicant has amended the claims to provide consistent use of the phrases "axially valve chamber" and "radial passage" throughout claims 1-10 and has eliminated the use of "axial passage". The claim amendments also correct the antecedent basis problems noted as pages 2-3 of the Office Action. It is respectfully submitted that these claim amendments are non-narrowing and make it clear and inherent what was in the claims as filed. In view of these claim amendments, Applicant respectfully requests that the § 112 rejections be withdrawn.

Turning to the prior art rejections, the Patent Examiner has rejected claims 1-10 as either anticipated or obvious over Tarr et al. The Examiner has asserted that "Tarr et al. discloses the basic method of counteracting flow induced forces in a valve assembly by having a high pressure region (41-43) followed by a narrow restriction (52), an intermediate pressure region (50), a second larger restriction (57), then the low pressure outlet (54)". Office Action, page 3, last paragraph.

As a preliminary matter, it should be noted that the high pressure region is on the outside of the valve in Tarr et al. and flow is radially inward. See e.g. FIGS. 1B and 6 of Tarr et al. Additionally, Tarr et al. provides a mechanism to stop the valve from self-closing when the valve is fully open. This is in contrast to the present disclosure which mainly deals with the condition where the valve approaches the near seat position, e.g. at the cracking point of the valve. Tarr et al. discloses a classic flow deflection mechanism that by carefully controlling the bending of the flow and deflecting the flow along a complex multi-directional path (e.g. reversing flow), the flow reducing mechanism (Col. 3, pg. 13) a counterbalancing force can be employed.

In light of the differences, claim 1 as now amended makes clear that the claimed invention of claim 1 does not work by controlling the direction of the flow, but rather through the mechanism of two flow restrictions in series with another and along the same direction. Specifically, claim 1 recites "directing fluid flow from the axial valve chamber to the radial

passage along a flow path that extends substantially in only one direction such that fluid flow between the axial valve chamber and the radial passage does not reverse direction therebetween." This is in stark contrast to the flow direction changer incorporated into the valve of Tarr et al. in which fluid flow reverses axial direction completely. The amendments to claim 1 more clearly distinguish the Tarr et al. reference. Accordingly, Applicant respectfully requests that the rejections of claim 1 be withdrawn.

Substantially one directional nature of the flow from the axial valve chamber to the radial flow passage can be seen for example in all embodiments of the present application such as FIGS. 4 and 7-13 in which it can be seen that the flow goes in only one axial direction and only one radial direction and does not switch axial direction as done in the Tarr et al. reference as shown in FIG. 2 of the Tarr et al. reference (the term substantially as used in claim 1 is meant to encompass bends and the like imparted by the nature and shape of the restrictions as shown in the embodiments).

Additionally, claim 11 has been added to provide for more comprehensive coverage of the present invention. Claim 11 does not require a claimed direction of flow as per claim 1 (but in many but not all respects is similar to claim 1 as originally filed), but additionally recites "fluidically balancing a fluid pressure across the valve in the closed position by having the high pressure region act upon opposed valve lands such that substantially no axial force is generated on the valve by the high pressure region in the closed position." Support for this claim language is found for example in paragraph 37 of the present patent application (see also lands 26 and 28 in FIG. 1). This is again is stark contrast to Tarr et al. which when the valve 23 is in the closed position, the higher pressure region 41, 43 referenced by the Patent Examiner only acts upon the one outside face of the valve such that there is not a fluidically balanced condition. As should be appreciated by one of ordinary skill, when high fluid pressures are exerted, this can cause a very substantial pressure imbalance across the valve. Accordingly, because Tarr et al. does not fluidically balance fluid pressure exerted by a high pressure region across the valve, claim 11 is in direct contrast to Tarr et al. and thereby patentably defines over the Tarr et al. reference.

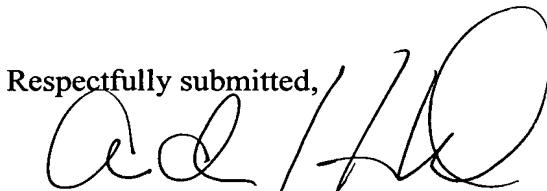
In view of the foregoing amendments and remarks, it is believed that all the claims are now in condition for allowance. Applicant respectfully requests a Notice of Allowance to be forthcoming from the U.S. Patent and Trademark Office.

In re Appln. Of: Enda M. Walsh
Application No.: 10/629,437

Conclusion

The application is considered in good and proper form for allowance, and the Examiner is respectfully requested to pass this application to issue. If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,


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